will be found best in practice. In all processes it is advisable to use a minimum of water, and to have all waste liquors as rich in $MgCl_2$, and as poor in potassium salts as possible before they are rejected.

All methods of preparing potassium sulphate from these salts must compete with the direct method of the Leblanc process, by which the alkaline chloride is converted into sulphate, and are at an additional disadvantage in comparison with it, because of the loss of HCl in the waste liquors.

ABSTRACTS.

Abstracts from the *Comptes Rendus*, by A. Bourgougnon.

Complex Function of Morphine, and its Transformation into Picric Acid; also its Solubility. By M. Chastaing. No. 1. (Jan. 2nd, 1882).—Action of alkalies. Potassa, soda,baryta and lime dissolve morphia in the proportion of one equivalent of morphia for one equivalent of base. The solutions evaporated in a vacuum give crystallized products containing one equivalent of base, one equivalent of morphia and two equivalents of water.

Action of Nitric acid. Tetrahydrated nitric acid at a temperature of 100° C. transforms morphia into an acid with the formula $C_{20}H_{18}N_2O_{18}$, a tetrabasic acid crystallizing with difficulty. Baryta and lead salts of this acid contained $8\,H_2O$.

Monohydrated nitric acid, in sealed tubes at 100° C. transform the acid $C_{20}H_{18}N_2O_{18}$ into picric acid.

Solubility of morphia. 1 litre of water at 0° C. dissolve traces of morphia, at 10°, 0 gr. 10; at 20° 0 gr. 20; at 40° 0 gr. 40, of crystallized morphia. The solubility of morphia at 40° is then represented by a straight line, but above 45° the solubility is represented by a larger number than the elevation of temperature. From 45° to 100° the curve of solubility affects a parabolic form.

Carbonic Ether of Borneol. By M. A. Haller. No. 2. Jan. 9th, 1882.—This ether was found in the residues of preparation of the compound described by the author under the name of *Borneol Cyane.* When pure it affects the form of very light white needles or hexagonal tables, insoluble in water and the alkalies, not very soluble in cold alcohol, soluble in boiling alcohol, ether, chloroform, benzine, glacial acetic acid. Melting point 215° C. and sublimes without decomposition. Melted with caustic potash it gives potassium carbonate and borneol.

In the cold, nitric acid is without action, at 100° C. a combination takes place with the formation of an oily substance, if the temperature is raised above 100° there is a decomposition with formation of nitrous vapors and production of camphor. Formula, $C_{21}H_{34}O_3$.

Essential Oil of Savory. By M. A. Haller. No. 3. (Jan. 16, 1882.—This essential oil is obtained from Savory, (Satureia Montana L), it is a mixture of hydrocarbons and phenols, and does not contain camphor; it is a liquid of an orange color, not very fluid, of an aromatic odor. Sp. gr. 0.7394 at 17° C. Rotatory power for a stratum of 200 m.m. is $LD = -6^\circ 5$ at 17° C. Treated withcaustic soda an insoluble hydrocarbon is produced; if after the separation of the insoluble hydrocarbon, the alkaline solution is acidified, an oily liquid is produced which distils between 230° and 245° C. After several rectifications a liquid is obtained boiling at 232°—233° C. Sp. gr. 0.972 at 17°, soluble in alcohol, ether and alkalies. It has for formula $C_{10}H_{14}O$ and is isomeric with thymol.

Diatomic Alcohol Derived from Beta-Naphthol. By G. Rousseau. No. 3. (Jan. 16, 1882.)—Beta-naphthol treated with chloroform and caustic soda in solution gives, besides an aldelyde, a white product characterized as a pseudo-diatomic alcohol.

It melts at 230°C. with decomposition, nearly insoluble in benzine, carbon disulphide and acetic acid, it is dissolved in small quantity in ether and petroleum naphtha.

An analysis has given the following numbers.

	I.	II.
C	86.01	85.94
H	4.65	4.60

The calculation for $C_{22}H_{14}O_2$ gives

C	85.16
H	4.51

Phosphoric Acid in the soils of the North of France. By A. Ladureau. No. 3. (Jan. 16, 1882.) **Silicomolybdic Acid.** By F. Parmentier. No. 5. (Jan. 30th, 1882.)—Obtained by the action of hydrochloric acid upon silicomolybdate of suboxide of mercury, the liberated acid gives by evaporation large bright-yellow cubo-octahedral crystals melting at about 45°, very soluble in water and diluted acids, forming crystallized salts with bases. Its composition is represented by SiO_2 12 $MoO_3 + 26$ H_2O, corresponding to the silicotungstic acid of Marignac.

Specific Gravity of Vapor of Pyrosulfuryl Chloride. By J. Ogier. No. 5. (Jan. 30th, 1882.)—Victor Meyer's and Dumas' method have been employed.

The first method gives the following numbers: 3.88, 3.59, 3.99, 3.69, 3.36; mean 3.70 in anilin vapor. The results obtained in sulphur or mercury vapor do not differ very much; they are 3.72, 3.42, 3.30. By Dumas' method the numbers obtained are 3.87, 3.72, 3.69, 3.70; average 3.74 at ordinary pressure, and at temperatures between 160° and 200°C.

The pressure being reduced (200 to 300^{mm} of mercury) in order to obtain a decrease of temperature, the sp. gr. obtained at 170° were 3.69, 3.75, 3.80, 3.69, average 3.73. The vapor weighed was ascertained by analysis to be a pure product.

Researches on Pilocarpin. By M. Chastaing. No. 5. (Jan. 30th, 1882.)—Pure pilocarpin has been treated with melted potassa, a volatile product with an alkaline reaction was formed, giving a precipitate with a slightly acid solution of platinum chloride, forming methylamin chloroplatinate. There has been no formation of a volatile base having the characteristics of conicin. Under the influence of melted potassa, in excess, pilocarpin furnishes methylamin, carbonic acid, butyric acid, and traces of acetic acid.

FOREIGN PATENTS.

C. Arnold, New York: *Apparatus for generating ozone* (Germ. P. 15678, Jan. 20, 1881). Into a tray of glazed earthenware are placed vessels containing pieces of phosphorus and water. The tray is covered with a bell of unglazed, porous earthenware. Through this bell the air passes in and the ozone passes out whilst the oxidation products of the phosphorus remain inside and dissolve in the water contained in the glazed tray.

H. Precht, New Stassfurt: *Method of preparing magnesia, potassium sulphide and potassium sulphate from potassium-magnesium sulphate.* (Germ. P. 15,747, March 8, 1881). The manufacture of potassium sulphate from the above mentioned double sulphate by heating it to redness by carbon, according to the equation:—
$2\ (K_2SO_4\ MgSO_4) + C = 2\ K_2SO_4 + 2\ MgO + 2\ SO_2 + CO_2$;
as indicated by Schwarz (Dingler's polyt. J. vol. 219, p. 352), is